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and deepens the original sense-impression. Dr. Holbrook gives wholesome advice to persons of weak memories, and shows how such may be trained to become very retentive and accurate. A few judicious paragraphs are given on the art of forgetting, instruction in which is quite as necessary for that class of persons who insist on overloading their memories with all sorts of mental rubbish, as is instruction in remembering for those minds which seem to retain nothing.

#### LONDON LETTER.

AN interesting discovery has very recently been made in the direct line between Pompeii and Nocera. The digging of a well in a vineyard revealed the existence of a street of tombs, about one thousand feet east of the amphitheatre of Pompeii. If the whole street is as closely lined with tombs as is the portion laid bare, it will be one of the most important discoveries lately made in that part of the world; but unfortunately money is wanting, so that the excavation is going on very slowly. Most of the tombs are covered with rude inscriptions painted in red, many of them being of the nature of advertisements, the tombs thus serving the purpose of a newspaper along the much-frequented road. The exact date has not yet been accurately ascertained, but they probably belong to the periods of Julius Caesar and Tiberius. A contrast may be drawn between the condition of Pompeii and that of Pergamon, which, although double the size of Pompeii, has, thanks to the energy of the Prussian government, been laid clear within eight years. In the latter, beautiful, finely painted statues, votive offerings to Athena, and belonging to the sixth century B.C., have been found buried in the earth, and literally forming the foundation of the houses above. Their style of art is one hitherto not supposed possible at so remote a period, and they cause Pompeii to appear quite modern.

The discovery of an aqueduct which probably dates back to the time of King Solomon is reported from Jerusalem, and it is confidently anticipated that the further excavation of it will bring to light some extremely interesting and valuable inscriptions.

The following particulars with regard to the Severn tunnel, which shortens the distance between the South Wales coal-field and the south and west of England, and which was opened yesterday for passenger traffic, may be of interest. The first sod was turned in March, 1873. The length of the tunnel is 7,664 yards, or  $4\frac{1}{4}$  miles, of which  $2\frac{1}{2}$  miles are under the river-bed, with a minimum 'cover' of 45 feet, and a maximum of

100; all this portion being bored through hard sandstone, conglomerate, and red marl, and costing roughly £100 per yard. The works have been flooded by land-springs four times, and the total cost is about two millions sterling. The tunnel is lined throughout with vitrified brick, set in about three feet thickness of cement.

It is announced to-day that Professor Rücker, F.R.S., has been appointed by the lord president of the council to the professorship of physics in the Normal school of science, and Royal school of mines, South Kensington, London, made vacant by the death of Professor Guthrie, F.R.S. The friends of the latter will regret to learn that his widow and family are but ill provided for, in consequence of the numerous family claims upon him during his life, and it is probable that the Physical society of London will start a fund on their behalf. Professor Rücker was, until recently, professor of physics at the Yorkshire college, Leeds, after which he unsuccessfully contested a parliamentary election for that city.

The reading and discussion of Mr. Gisbert Kapp's paper on the 'Predetermination of dynamo characteristics' have occupied three evenings (one a special and extra meeting) at the Society of telegraph engineers and electricians. The paper dealt with the construction beforehand of what may be called the 'idle' characteristic curve of dynamos; and the discussion turned in great part upon the questions of magnetic resistance, and especially of air resistance, as well as on the analogy between the electric and magnetic circuits. Before commencing his paper, Mr. Kapp stated that only two days previously he had found that many of his points had been anticipated in a paper on dynamo-electric machinery, by Dr. J. and Dr. E. Hopkinson, communicated to the Royal society in May last, but which had only just been published. It is greatly to be regretted that the routine of the Royal society prevents an earlier publication of important scientific papers which have a direct bearing upon industrial progress.

One result of the more extended adoption of the electric light in public buildings in London is a notable increase in the number of winter exhibitions of pictures. Nearly all artistic societies of any importance now hold their 'winter exhibitions' with as great regularity as the summer ones, which open in May. The electric lighting of the Grosvenor gallery, due chiefly to Sir Coutts Lindsay, first demonstrated the advantages which were thus obtainable.

The disinfection of articles of clothing, and of dwellings, after infectious ailments, is admittedly one of the most important duties which attends the work of preventing disease. A recent report

of the medical officer of the local government board presents the entire question of the destruction of germ-life in a new aspect, including, as it does, a memoir on disinfection by heat, from the pen of Dr. Parsons. The degree of dry heat necessary to kill the germs of diseases well known to be infectious was first investigated. The bacilli of splenic-fever, for example, were killed by exposure for five minutes in a dry heat varying from 212° to 218° F. but their spores did not yield to two hours at 220°. One hour at 245°, and four hours at 220°, achieved the result. Some very remarkable practical instances are given of the difficulty with which dry heat penetrates such articles as bedding, blankets, and pillows. For example: a thermometer enveloped in a roll of flannel, placed in a hot-air bath at 212°, only registered 130° at the end of one hour! Dr. Parsons demonstrated by numerous experiments that steam at or above 212° possesses a very much greater power of penetration and disinfection than dry heat, and that, where actual steam cannot be employed, moistening the air of the heated chamber materially reduces the time required for efficient disinfection. Apparatus for thus treating the clothes, etc., of the sick poor ought to be a feature of the municipal arrangements of every city.

The sewage discussion (started by Dr. Meymolt Tidy's paper, alluded to in this correspondence in the summer) was continued, but not concluded, last night. Dr. Alfred Carpenter made a very strong speech in favor of irrigation, pointing out that the milk obtained from the sewage farm at Croydon was consumed with perfect safety. On the question of standards, a decided opinion was expressed, that these constant discussions of chemists would before long lead to a complicated formula, which would become a standard in a particular case.

A curious discussion, which attracts a good deal of attention, is now going on upon the use of boracic (or boric) acid for the curing of fish. It is being largely employed by the Norwegians; and the result is, that Scandinavian herrings are to some extent superseding the Scotch produce in the English market. Opinion is largely divided upon its toxic properties, in repeated small doses, and the whole matter is so new, that *experientia docet* will hardly avail. The first observation of the preservative power of alkaline borates is said to have been made in the case of a dead horse in southern California.

W.

London, Dec. 2.

HUBERT HERKOMER, Slade professor of art at Oxford university, proposes to paint before his classes as a means of instruction.

#### NOTES AND NEWS.

IN referring to the work of the appropriation committee recently on the floor of congress, Mr. Long from Massachusetts remarked that "it ought to be said in justice that the coast survey is in a condition of suspension, owing to the unaccountable, and, I think, culpable neglect of the President to appoint a man of scientific attainment at its head. The committee on appropriations have some reason for saying that they do not feel like giving full weight to the recommendation of a superintendent, unless that superintendent be a man of scientific acquirements. The gentleman who is at the head of it — an estimable man, who is doing the best he can, and is to be credited for what he has done — is not and does not pretend to be a man of any fitness or any training for the place. He would frankly say, I have no doubt, that he regards himself merely as a *locum tenens*, and is ready to give it up whenever the President will select the proper man. And yet for nearly two years the President of the United States, turning a deaf ear to the demands of science and commerce, refuses to fill this post, for which there is no lack of worthy material, and is making this coast survey the sport almost of public opinion."

— The recent death of Paul Bert, and the publication of a new edition (Philadelphia, *Lippincott*) of his 'First steps in scientific knowledge,' are amply sufficient reasons for calling further attention to that admirable little book. Its phenomenal sale in France, and the large sale of the English edition, apart from the intrinsic excellence of the book itself, warrant us in predicting the great success of the edition prepared for American schools by Prof. William H. Greene of Philadelphia. Though embracing the elementary facts of natural history, geology, physics, chemistry, anatomy, and physiology in some four hundred and fifty duodecimo pages, M. Bert's book is at once thorough, simple, and exact. It is a book which should find its way into every school in the country pretending to give a sound mental training; and the mastery of it, or its equivalent, should be required for admission to every high school and college in the land.

— Professor Heinrich von Treitschke of the University of Berlin has been appointed royal historiographer of Prussia, in succession to the late Leopold von Ranke.

— The steamer A. D. Bache, of the coast survey, will leave New York this week for the coast of Florida, where Assistant Hergesheimer is already at work. Assistant Perkins will commence work on the south coast of Florida about Jan. 1.